

AMENDMENTS TO THE CLAIMS:

Please cancel Claims 3-6, 16 and 17 without prejudice or disclaimer of subject matter.

Please add new Claims 21-49 to read as shown below. All of the claims now pending in this application are set forth below.

1. (Previously Presented) An electron beam lithography apparatus including an electron optical lens-barrel having an electron lens for converging an electron beam and a deflector for deflecting the electron beam, a sample chamber for holding a sample to be subjected to lithography in a vacuum state, and a sample stage on which the sample is placed, said apparatus comprising:

a magnetic force generator for applying a pre-load to the sample stage; and

a first magnetic field shield for shielding a magnetic field from said magnetic force generator to an internal space in the sample chamber.

2. (Previously Presented) The apparatus according to claim 1, further comprising a surface plate for guiding the sample stage, wherein said magnetic force generator includes a permanent magnet and the sample stage is attracted to said surface plate by an attracting force of said permanent magnet.

3. - 6. (Cancelled)

7. (Previously Presented) A stage used in an electron beam lithography apparatus, comprising:

a sample stage on which a sample is placed;

a magnetic force generator for applying a pre-load to said sample

stage; and

a magnetic field shield for shielding a magnetic field from said magnetic force generator.

8. (Original) The stage according to claim 7, wherein said sample stage is supported to float on a surface plate by air.

9. (Previously Presented) The stage according to claim 7, wherein said magnetic field shield is provided outside said magnetic force generator.

10. (Previously Presented) The stage according to claim 7, wherein letting t_1 be a distance between a surface plate for guiding said magnetic force generator and a surface, opposing the surface plate, of said magnetic force generator, and t_2 be a distance between an edge portion of said magnetic field shield and the surface plate, a relationship $t_1 > t_2$ is satisfied.

11. (Previously Presented) An electron beam lithography method using an electron beam lithography apparatus comprising an electron optical lens-barrel having an electron lens for converging an electron beam and a deflector for deflecting the electron beam, a surface plate, a sample stage movable on the surface plate, a magnetic force generator for applying a pre-load to the sample stage, and a magnetic field shield for shielding a magnetic field from the magnetic force generator, comprising the steps of:

placing a sample on the sample stage; and

directly drawing a pattern on the sample using the electron beam.

12. (Previously Presented) The apparatus according to claim 1, further comprising a second magnetic field shield for shielding a magnetic field from the electron optical lens-barrel to the internal space in the sample chamber.

13. (Previously Presented) The apparatus according to claim 1, further comprising a second magnetic field shield for shielding a leakage magnetic field from the first magnetic field shield to the internal space in the sample chamber.

14. (Previously Presented) The apparatus according to claim 2, wherein said first magnetic field shield is arranged to surround surfaces of said permanent magnet except a surface opposing said surface plate.

15. (Previously Presented) The apparatus according to claim 2, wherein said sample stage is supported to float on said surface plate by air.

16. - 17. (Cancelled)

18. (Previously Presented) The apparatus according to claim 7, wherein said magnetic force generator includes a permanent magnet, said sample stage being attracted to a surface plate for guiding said sample stage by an attracting force of said permanent magnet.

19. (Previously Presented) The stage according to claim 7, further comprising a second magnetic field shield for shielding a leakage magnetic field from the first magnetic field shield to the internal space in the sample chamber.

20. (Previously Presented) The stage according to claim 18, wherein said first magnetic field shield is arranged to surround surfaces of said permanent magnet except a surface opposing said surface plate.

21. (New) A motor comprising:
a first yoke provided with an electromagnetic coil; and

a second yoke arranged to move relative to the first yoke, the second yoke being provided with a magnet, having a facing surface facing the electromagnetic coil and a non-facing surface that is a surface other than the facing surface, and a magnetic field shield surrounding the non-facing surface of the magnet.

22. (New) A motor comprising:

a first yoke provided with an electromagnetic coil; and

a second yoke arranged to move relative to the first yoke, the second yoke being provided a first magnet having a first side facing the electromagnetic coil, a second magnet having a second side facing the electromagnetic coil, and a magnetic field shield, the first and second sides being directed to directions different from each other, the magnetic field shield being arranged to surround sides of the first and second magnets which are opposite sides of the first and second sides.

23. (New) A linear motor comprising:

a first yoke provided with a plurality of electromagnetic coils arranged along a first direction; and

a second yoke arranged to move, relative to the first yoke, along a direction substantially parallel to the first direction, the second yoke being provided with a magnet, having a facing surface facing at least one of the electromagnetic coils and a

non-facing surface that is a surface other than the facing surface, and a magnetic field shield surrounding the non-facing surface of the magnet.

24. (New) The linear motor according to claim 23, wherein a dimension of the magnetic field shield in the first direction is smaller than a movable range of the second yoke.

25. (New) The linear motor according to claim 23, wherein
the second yoke moves relative to the first yoke by energizing two
electromagnetic coils of the plurality of electromagnetic coils, and
a dimension of the magnetic field shield in the first direction is such
that the magnetic field shield can surround the two electromagnetic coils.

26. (New) The linear motor according to claim 23, wherein the first
yoke is used as a fixed yoke and the second yoke is used as a movable yoke.

27. (New) The linear motor according to claim 23, wherein the linear
motor is arranged to be used in a processing device performing a process by using an
electron beam.

28. (New) A linear motor comprising:
a first yoke provided with a plurality of electromagnetic coils
arranged along a first direction; and
a second yoke arranged to move, relative to the first yoke, along a
direction substantially parallel to the first direction, the second yoke being provided a first
magnet having a first side facing at least one electromagnetic coil, a second magnet having a
second side facing at least one electromagnetic coil, and a magnetic field shield, the first and
second sides being directed to directions different from each other, the magnetic field shield
being arranged to surround sides of the first and second magnets which are opposite sides
of the first and second sides.

29. (New) The linear motor according to claim 28, wherein the first
magnet and the second magnet are arranged to face both sides of the at least one
electromagnetic coil.

30. (New) The linear motor according to claim 28, wherein the first
yoke is used as a fixed yoke and the second yoke is used as a movable yoke.

31. (New) The linear motor according to claim 28, wherein the linear
motor is arranged to be used in a processing device performing a process by using an
electron beam.

32. (New) A sample moving device comprising:

a first yoke provided with a plurality of electromagnetic coils arranged along a first direction;

a second yoke arranged to move, relative to the first yoke, along a direction substantially parallel to the first direction, the second yoke being provided with a magnet, having a facing surface facing at least one electromagnetic coil and a non-facing surface that is a surface other than the facing surface, and a magnetic field shield surrounding the non-facing surface of the magnet; and

a holder arranged to hold a sample, the holder being attached to a member comprising the first yoke or a member comprising the second yoke.

33. (New) A sample moving device comprising:

a first yoke provided with a plurality of electromagnetic coils arranged along a first direction;

a second yoke arranged to move, relative to the first yoke, along a direction substantially parallel to the first direction, the second yoke being provided a first magnet having a first side facing at least one electromagnetic coil, a second magnet having a second side facing at least one electromagnetic coil, and a magnetic field shield, the first and second sides being directed to directions different from each other, the magnetic field shield being arranged to surround sides of the first and second magnets which are opposite sides of the first and second sides; and

a holder arranged to hold a sample, the holder being attached to a member comprising the first yoke or a member comprising the second yoke.

34. (New) A stage comprising:

a fixed yoke provided with an electromagnetic coil;

a movable yoke arranged to move relative to the fixed yoke, the movable yoke being provided with a magnet, having a facing surface facing the electromagnetic coil and a non-facing surface that is a surface other than the facing surface, and a magnetic field shield surrounding the non-facing surface of the magnet; and

a table on which a sample is placed, the table being attached to a member comprising the movable yoke.

35. (New) A stage comprising:

a fixed yoke provided with an electromagnetic coil; and

a movable yoke arranged to move relative to the fixed yoke, the movable yoke being provided a first magnet having a first side facing the electromagnetic coil, a second magnet having a second side facing the electromagnetic coil, and a magnetic field shield, the first and second sides being directed to directions different from each other, the magnetic field shield being arranged to surround sides of the first and second magnets which are opposite sides of the first and second sides; and

a table on which a sample is placed, the table being attached to a member comprising the movable yoke.

36. (New) A stage comprising:

a first fixed yoke provided with a plurality of electromagnetic coils arranged along a first direction;

a first movable yoke arranged to move, relative to the first fixed yoke, along a direction substantially parallel to the first direction, the first movable yoke being provided with a first magnet, having a first facing surface facing at least one electromagnetic coil and a first non-facing surface that is a surface other than the first facing surface, and a first magnetic field shield surrounding the first non-facing surface of the first magnet;

a second fixed yoke provided with a plurality of electromagnetic coils arranged along a second direction substantially perpendicular to the first direction;

a second movable yoke arranged to move, relative to the second fixed yoke, along a direction substantially parallel to the second direction, the second movable yoke being provided with a second magnet, having a second facing surface facing at least one electromagnetic coil and a second non-facing surface that is a surface other than the second facing surface, and a second magnetic field shield surrounding the second non-facing surface of the second magnet; and

a table on which a sample is placed, the table moving with the first movable yoke and the second movable yoke in directions substantially parallel to respective ones of the first and second directions.

37. (New) An apparatus for patterning a sample with an electron beam, the apparatus comprising:

an electron beam source;

a fixed yoke provided with an electromagnetic coil;

a movable yoke arranged to move relative to the fixed yoke, the movable yoke being provided with a magnet, having a facing surface facing the electromagnetic coil and a non-facing surface that is a surface other than the facing surface, and a magnetic field shield surrounding the non-facing surface of the magnet; and

a table on which a sample is placed, the table being attached to a member comprising the movable yoke.

38. (New) An apparatus for patterning a sample with an electron beam, the apparatus comprising:

an electron beam source;

a fixed yoke provided with an electromagnetic coil; and

a movable yoke arranged to move relative to the fixed yoke, the movable yoke being provided a first magnet having a first side facing the electromagnetic

coil, a second magnet having a second side facing the electromagnetic coil, and a magnetic field shield, the first and second sides being directed to directions different from each other, the magnetic field shield being arranged to surround sides of the first and second magnets which are opposite sides of the first and second sides; and

a table on which a sample is placed, the table being attached to a member comprising the movable yoke.

39. (New) An apparatus for patterning a sample with an electron beam, the apparatus comprising:

an electron beam source;

a first fixed yoke provided with a plurality of electromagnetic coils arranged along a first direction;

a first movable yoke arranged to move, relative to the first fixed yoke, along a direction substantially parallel to the first direction, the first movable yoke being provided with a first magnet, having a first facing surface facing the electromagnetic coil and a non-facing surface that is a surface other than the first facing surface, and a first magnetic field shield surrounding the first non-facing surface of the first magnet;

a second fixed yoke provided with a plurality of electromagnetic coils arranged along a second direction substantially perpendicular to the first direction;

a second movable yoke arranged to move, relative to the second fixed yoke, along a direction substantially parallel to the second direction, the second

movable yoke being provided with a second magnet, having a second facing surface facing the electromagnetic coil and a second non-facing surface that is a surface other than the second non-facing surface, and a second magnetic field shield surrounding the second non-facing surface of the second magnet; and

a table on which a sample is placed, the table moving with the first movable yoke and the second movable yoke in directions substantially parallel to respective ones of the first and second directions.

40. (New) A device manufacturing method comprising:
coating a photosensitive agent on a sample; and
patterning the sample coated with the photosensitive agent by using
the apparatus defined in claim 37.

41. (New) A device manufacturing method comprising:
coating a photosensitive agent on a sample; and
patterning the sample coated with the photosensitive agent by using
the apparatus defined in claim 38.

42. (New) A device manufacturing method comprising:
coating a photosensitive agent on a sample; and
patterning the sample coated with the photosensitive agent by using
the apparatus defined in claim 39.

43. (New) A stage comprising:
a surface plate;
a table on which a sample is placed;
a driver having a magnet and an electromagnetic coil and controlling
a position of the table relative to the surface plate;
a first magnetic field shield disposed between the driver and the
sample; and
a second magnetic field shield disposed between the first magnetic
field shield and the sample.

44. (New) The stage according to claim 43, wherein the first magnetic
field shield comprises a ferromagnetic material and the second magnetic field shield
comprises a high-permeability material.

45. (New) The stage according to claim 43, wherein the first magnetic field shield comprises an iron-based material and the second magnetic field shield comprises Permalloy.

46. (New) The stage according to claim 43, wherein the magnet is attached to the surface plate and the electromagnetic coil is attached to the table.

47. (New) The stage according to claim 46, further comprising:
a spacer of a non-magnetic material disposed between the first magnetic field shield and the second magnetic field shield.

48. (New) An apparatus for patterning a sample with an electron beam, the apparatus comprising:

- an electron beam source;
- a stage surface plate;
- a table on which a sample is placed;
- a driver having a magnet and an electromagnetic coil and controlling a position of the table relative to the stage surface plate;
- a first magnetic field shield disposed between the driver and the sample; and

a second magnetic field shield disposed between the first magnetic field shield and the sample.

49. (New) A device manufacturing method comprising:
coating a photosensitive agent on a sample; and
patterning the sample coated with the photosensitive agent by using
the apparatus defined in claim 48.